" Ethnobotanical Study And Conservation Of Medicinal Plants From Parbhani District Of Maharashtra "

Ph. D Synopsis

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Introduction

India is sitting on a gold mine of well recorded and traditionally well practiced knowledge of herbal medicine. This country is using largest procedure of medicinal herbs and called “Botanical garden of the world”. India officially recognizes more than 3000 plants for their medicinal value and over 800 plants are used in traditional purpose. India is third world country representing about 75% herbal medicinal needs. There are about 7000 firms manufacturing traditional medicines with or without standardization (choudhary, *et al*.1998).

India is one of the 12 mega diversity countries in the world and has 17,000 flowering plants. The country is representing by 400 different tribal and other ethnic groups constitutes about 7.5% of India’s population (Viswanathan 1997)

Tribal people throughout the world including India have developed their own cultures, customs, religion rites, taboos, legends, myths, folk tales, medicines, food etc. This can be utilized in tribal development now a day greater emphasis is given on the traditional knowledge and usage of natural products as a new source of food and medicine (Ganesan, *et al.* 2007).

Marathwada is suggested state and geographical region of India. Marathwada consist of 8 districts: Aurangabad, Hingoli, Jalna, Beed, Osmanabad, Latur, Nanded, Parbhani form a part of the Deccan plateau of Maharashtra state of India.

The climate of Marathwada region supports rich tropical dry deciduous forests. The tropical climate of parbhani region consists high rain fall during summer than winter (Gaikwad, *et al.* 2014).

Parbhani is one the largest district of Marathwada region, situated at 19º15’ N latitude and 76º46’ longitude covering an area about 37.77 km^2 of Mrathwada, 3.55% area of Marthwada region under forest. It typically receives about 108.48 millimeters of precipitation and has 106.19 rainy days annually .The district is at average height of 357 m from sea level.

Parbhani district is one of the most important regions surrounded by Balaghat and Ajanta hill ranges have rich biodiversity of medicinal plants (Syed 2019)

A large number of plants from this region are known to possess medicinal properties and many other plants having medicinal properties are used by local and tribal peoples are not known in medicinal profession.

Many drug plant parts are used substitutes or adulterant due to lack of human expertise in recognizing them. Due to lack of detailed description it has made it practically

impossible to decide the identity of these drug plants. Many plants possess two or more local names. Thus, this need correct scientific identification of drug plants and parts used in the medicine and their standardization by carrying out and taxonomic studies.

Hershberger (1985) first coined term “Ethanobotany”. Robins Harrigton and ferio Marres (1916) investigated Ethanobotany as a study and evaluation of the knowledge of all phases of plant life among primitive societies and their effect on environment. It deals with all aspects of direct relationship of plants with man. Ethanobtany has also played a significant role in other branches of science like medicine, pharmacology, ethno gynecology, ethno pediatrics, ethno agriculture, ethno toxicology, ethno narcotics, archeo Ethnobotany (Pal 2023).

‘Ethnobotany ’deals with the study of total and natural traditional interrelationship between plant, humans and domesticated animals. In ancient times, the earliest man on this earth consumes jungle fruits, tubers or hunting animal as a food and from which the birth of ethnobotany and ethnozoology begins. The journey of ethno botany from those early beginning through ages has been long. (Ayyanar and Ignocimuthu, 2005)

Review of Literature:

In Indian system of herbal medicine and its plant drugs caught the attention of west, since the beginning of colonial days. Garcia dacorta, the personal physician of the Portuguese Governor in India published his colleague on the samples and drugs of India in 1563; and this was followed by Henrich Van Rheede, the Dutch Governor of Cochin who published a 12-volume work on Kerala Medicinal plants (1678-1703) from Amsterdam. Since then, most of the systematic work on Indian medicinal plants has been done by North Indian authors, Chopra *et al.* (1956). In addition to these, there are a few important recent studies were reported on Kerala medicinal plants.

In this region very little work has been done on medicinal plants and their utilization has been neglected by most of the taxonomists.

The work of utilization of medicinal plants and their standardization was initiated in 1994 in this institute by Zate B. R. (1997). Zate B. R. and Londhe (1998), Syed S. V. (2002) carried out macro and microscopic studies in *Withania somenifera* L. under wild as well as cultivated conditions and found the efficacy of drug is more under cultivated conditions.

Ayyanar M. and Ignacimuthu S. (2005) carried out Ethnobotanical survey among ethnic groups in Southern Western Ghats of India. They describe traditional uses of 54 plant species belonging to 26 families and documented Ethnomedicinal plants were mostly used to cure skin diseases, poison bites, wounds and rheumatism.

Prakash et al. (2013) investigates substitution of herbs is necessary at present met, more than 300 medicinal plants was red listed on the basis of pharmacological activity. Substitution of herbs achieved lots of goals through basic concept and gives proper effect as compared to original drug.

Vasait (2017) reported that soil is a dynamic body provides nutrients to the growing plants. plants are rich source of food as well as other important ingredients to human. From ancient times medicinal plants was practiced as a traditional source of herbal medicine.

Objectives of Research:

Keeping this in view, the following objectives are formulated to carry out the proposed study in relation to survey and studies of medicinal plants.

1. Study of Plant diversity :

i. To undertake extensive survey of medicinal plants of Parbhani District and identify them with standard flora.

ii. To document the therapeutic properties of identified plants from local people, traditional healers and gardeners.

2 . Conservation :

Conservation of Medicinal plants from parbhani District of Maharashtra.

Plan of work and methodology

Plan work

1. Collection of plants
2. Authentication of plants
3. Preparation of herbarium
4. Documentation of medicinal uses
5. Conservation of medicinal plants

Methodology

1. Collection of plant:

Medicinal plants collection from different regions of Parbhani District by successive visiting.

2. Authentication of plant: (by different Floras)

Identification of medicinal plants with different floras like Flora of Marathwada by Naik V.N. (1998), Flora of Precedency of Bombay by Cooke T. (1903), Flora of the Indian Desert by Bhandari M. M. (1978), Flora of British India by Hooker J.D. (1872-1897), Flora of Akola district by Kambale and Pradhan (1988), Flora of Nashik district by Narsimhan and Sharma (1991), etc

3. Preparation of herbarium

i. Collection:

The specimen material (plants) which are interested it should be collected as whole (if they are herbs) or part of plant along with flowers and fruits/carpels. Before putting the specimens in collection bag carefully remove all the insects, spider-webs and foreign bodies attached to your specimens. Then the specimens mounted in 42 cm x 29 cm (16 ½" x 11 ½") size blotting paper. If the plant specimen larger than the specimen blotting paper then they can be mounted in V or N or M shape to accommodate the entire plant material in above size. Also the leaves mounted in dorsoventral position. The half-size of the regular newspaper can fit this size and economical. Put the mounted specimens in between cardboards/wooden-frames. (Kottapalli *et al.* 2016)

ii. Pre-treatment:

Before putting the specimens in the Plant-Press few more steps are to be taken:

a. tagging with field numbers to all the duplicates;

b. trimming to a suitable size;
c. fixing the entire specimen or to the fragile points like leaf-bases, flowers, etc. using some chemicals like diluted formalin;
d. for colour retention dipping in special solution, etc

When, it is scheduled to return to the laboratory after a long time then a different method can be followed. Keep the trimmed and shaped specimens within the blotters, add diluted formalin (formalin (2): water (3)) (Fosberg & Sachet, 1965; Smith, 1971) on the specimens using droppers or a brush so that some amount is also soaked into the blotters. These are then made into thick bundles, insert in a polythene bag, seal the bag tightly and then put it in another similar bag and seal it again. Put one identity/ reference mark on the packet. Or, instead of putting formalin solution on each blotter, soak the entire packet taking the solution in a bucket or in such a similar big container for about two hours; keep it outside to drain off the excess solution and then seal it twice in polythene bags. Such packed specimens can be stored for a longer period and after drying, these specimens may not be poisoned again. One important caution, while using formalin switch-off the overhead fan. If available use a pedestal or table fan from your back side otherwise evaporated formalin will affect the eyes. Or, if you are working in open area then check the direction of air-flow so that evaporated formalin moves away from you. And, the use of gloves during such works is a must! (Bhandari and Gurung, 2020)

4. Poisoning and drying the specimen:

Poisoning kills the plants and prevents the formation of abscission layer and thereby the leaves, flowers and fruits will be intact with the specimen (twig) will not be getting detached from the plant. The poisoning is generally done by dipping the whole plant in a saturated solution of mercuric chloride in ethyl alcohol (usually 20gm in a litre of alcohol). The plant is again put between the blotters in the presser till it gets completely dried. Mercuric chloride is corrosive for metals, and hence enamel trays and disposable gloves are used.

Then, the specimens are spread out for pressing and drying. It is important that the plants are put under sufficient pressure; otherwise more time will be required to achieve a good desiccation, besides they could be damaged by dampness and moulds. Every specimen

in the press must be linked with the data in the field note book. Detailed notes should be entered in the field note book at the time of collection in the field itself. The best one can do is to use a tag for each specimen. Bulky plant parts can directly be placed in contact with corrugated material to speed up drying. Instead of blotting paper we can use newspapers, which are cheap and readily available. Once a specimen has become dry and stiff, it is ready for mounting.

5. Mounting and labelling:

The dried plant specimens are now ready for mounting on herbarium sheets. Fixing the processed plant specimen on herbarium sheet is called mounting. A standard herbarium sheet is 28 cm (breadth) x 42 cm (length) and usually made up of heavy long-lasting white handmade paper or thick sheet. The sheet is usually stiff and flexible so as to prevent damage during the handling of mounted specimens. The common technique is pasting specimens to sheet with natural glue (usually Gum Arabic). Small quantity of copper sulphate may be added to the glue as insect repellent. It is advised to have a paper bag/pouch attach to the herbarium sheet to keep any seed/fragments detached from the specimens. Now the herbarium specimen sheet pasted with a label usually at the right side bottom corner. Now the herbarium specimen sheet is now ready. (Kottapalli *.et al.* 2016)

4. Documentation of medicinal plants uses collected :

Information of the medicinal plants collected during research work will be documented properly on the basis of type of Human diseases on which that plant is used and on the basis of plant part use as medicine source to cure the disease.

Information collected during survey will be documented and submitted in thesis form.

5. Conservation :

Conservation of medicinal plants will be done from plant cuttings, seeds, corms etc. in the botanical garden of parbhani.

Importance of the study:

Ethnobotany is interdisciplinary science which gives fresh thoughts for environment planners, as a tool for selection of plant species for the development of drugs by pharmacologists, phyto-chemists, clinical as a new source.

Ethnobotanical studies provide understanding of local communities traditional knowledge and use of plants and conserving biodiversity.

International status:

Internationally several researchers reported ethnobotanical study.

In USA, Modern approach to ethnobotany developed and prominent center for the ethnobotanical study is the Botanical Museum of the Harvard University in Massachusetts. World health organization (WHO) in 2000 listed over 21000 plants species for their medicinal uses throughout the World.

Idowu *et al. (*2010) study herbal medicine used for treatment of malarial fever through conducting Ethnobotanical survey of 17 communities in Ogun State, Southwest Nigeria. Kiringe (2005) reported the use of traditional medicine is prevalent among rural communities of Africa as they have vast knowledge on ethnomedicine.

Ethnobatnical studies carried out in Parbat District of Western Nepal (Malla *et al.* ,2015) revealed medicinal use of 132 plant species belonging to 67 families & 99 genera, to cure human aliments, asthma, eczema, dysentery, gastrointestinal disorders & skin diseases,

Barret(1994) carried out ethnomedicinal studies, reveled 152 plant species used by the people of Nicaragua's Atlanitc coast for treatment of various diseases.(Manju and Ahad T. ,2021)

National status:

India provides diversity of medicinal plants that grow in a variety of geographical & ecological place.

In India there is very great amount of scope for the study of ethnobotanical knowledge. Due to vast heritages of Vedic literate during back to 2000-1000 B.C. (Manju and Ahad T., 2021)

About 25% Of modern medicines are developed from plants according to WHO & used traditionally.India has about 27% of total known medicinal plant species of the world (Kumar & katakam,2000)

Borah *et al.* (2012) carried out Ethnomedicinal studies among Mongoloid and Ao-Naga ethnic groups of Disoi Valley forest area of jorhat district Northeast Assam & reported 50 species of medicinal plants belonging to 33 families.

Ethno-medico botanical studies carried out by Bhakshu & Raja (2007) of certain Euphorbiaceous medicinal plants of Eastern Ghats, Andhra Pradesh.

Lal & Lata (1980) studied the medicinal plants used by Bhat Community in Punjab for regulation of fertility.

Bhat et al. (2018) recorded Eighty three medicinal plants species that were used by tribal & local people of Bandipora for treating chlorea, fever, diabetes scabies, whooping cough, purification etc.

Significance of the study:

a. Present research work will provide up to date knowledge of medicinal plants growing in this area used by the local peoples to cures diseases & also provide information regarding traditional uses of plant.

b. Conservation of rare medicinal plants by propagating their seeds, cuttings etc. in botanical garden of Shri shivaji college parbhani.

Proposed work plan:

Sr. No.	Year	Duration	Proposed work
1	2022	Dec2022- June2023	Ph. D course work
2	2023	July2023- Dec2023	Review of literature & Survey of Medicinal Plants
3	2024	Jan2024- June 2024	Survey of Medicinal Plants , Identification , Herbarium preparation and conservation of medicinal Plants
4	2024	July2024- Dec2024	Finalization of obtained results and submission of Final Ph. D synopsis.
5	2025	Jan.2025 – June 2025	Ph.D. Thesis submission

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Research Scholar **Research Supervisor**